

Table 4. Comparable average test weight (lbs/bu) on dryland, comparing Rampart to six other hard red winter wheat varieties (1993-1995).

Variety	Bozeman	Conrad	Havre	Huntley	Kalispell	Moccasin	Sidney	Average
Rampart	60.5	62.3	57.7	59.0	60.5	60.5	61.5	60.7
Judith	59.3	60.4	56.3	57.0	59.2	58.4	58.3	58.4
Neeley	60.9	60.9	57.2	58.3	60.0	59.9	59.9	59.5
Redwin	61.8	61.2	59.3	59.9	59.9	61.0	61.2	60.6
Rocky	62.0	62.9	58.9	59.0	59.6	60.3	61.5	60.6
Tiber	61.4	61.6	59.8	59.6	59.7	60.8	61.2	60.6
Vanguard	61.1	62.9	60.4	58.6	59.9	60.3	60.0	60.3

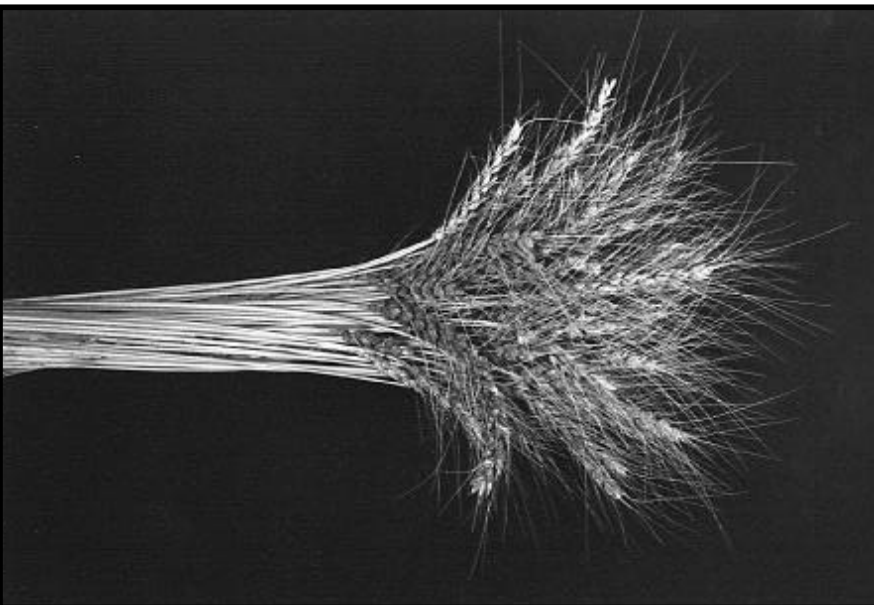
Table 5. Average milling, baking and other quality characteristics of Rampart and three other hard red winter wheat varieties (1993-1994).

Variety	Flour		Farinograph ¹	Baking data		
	Yield (%)	Ash (%)	Dough stability ² (in minutes)	Wheat protein (%)	Water absorption ³ (%)	Loaf volume (cc)
Rampart	70.7	0.36	3.8	13.3	76.7	1080
Judith	69.8	0.37	3.8	12.7	75.1	1052
Redwin	69.2	0.32	3.1	13.3	72.8	976
Vanguard	69.4	0.37	3.9	13.6	75.4	1096

¹Machine for measuring physical dough mixing properties of wheat flour.
²Dough stability describes the length of time a wheat flour may be mixed before it breaks down.
³Water absorption: Bake absorption is the amount of water a flour sample requires to make a dough for optimum baking responses.
Source: MSU Cereal Quality Laboratory, Annual Report 1993-1994.

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**Rampart
Winter
Wheat**



Rampart Winter Wheat

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Rampart (PI 593889) is a hard red winter wheat developed by the Montana State University Agricultural Experiment Station. Rampart is a solid stemmed variety resistant to the wheat stem sawfly. Its winter hardiness is similar to Vanguard, slightly less than Neeley, Rocky and Centurk. It has good test weight, protein, milling and baking qualities.

Origin and Development

Rampart was developed from the cross of 'Lew'/'Tiber'/'Redwin' made in 1985. An individual headrow in the F₅ generation was selected from the cross in 1990 by Gene Hockett. This selection was tested for wheat stem sawfly resistance and was released to certified seed producers in 1996. Rampart is a sister line of Vanguard.

Agronomic Characteristics

Rampart is a solid-stemmed, brown-chaffed, awn spiked, hard red winter wheat. It matures approximately one day later than Judith and Rocky, but two days earlier than Neeley. Rampart has a very long coleoptile approximately one inch longer than Rocky and Redwin. Kernels are hard, red, with a mid-sized germ. The kernel is long with a sloping back and a heavy brush. Kernel cheeks are rounded to angular with an open crease. Agronomic data is provided in Table 1.

Disease and Insect Resistance

Rampart is resistant to the wheat stem sawfly. It has some tolerance to the wheat curl mite and/or wheat streak mosaic virus. Rampart is resistant to prevalent races of stem rust. It is susceptible to leaf rust, stripe rust, dwarf bunt and the Russian wheat aphid (Table 2).

Table 1. Agronomic comparisons of Rampart with six other hard red winter wheat varieties grown under Montana conditions.

Variety	Winter hardiness ¹	Approx. heading date (June)	Plant height (in.)	Lodging ²	Grain shatter ²
Rampart	2	12	34	M	M
Judith	3	11	35	R	M
Neeley	3	14	35	MR	S
Redwin	3	13	37	VR	VR
Rocky	2	11	36	M	S
Tiber	3	13	37	VR	VR
Vanguard	2	12	34	MS	M

¹1=non-hardy; 5=very winter hardy

²R=resistant; M=moderate; S=susceptible

Areas of Recommendation

Rampart is recommended for production in wheat stem sawfly infested areas on dryland in Districts 3, 4 and 5. Rampart should be planted only in areas where high levels of winter hardiness are not required.

Field Performance

Rampart has yielded seven percent more bushels than its sister line Vanguard, but 10 percent less than Judith if sawflies are not present. If sawfly infestation is heavy, Rampart will yield equal to Judith, Rocky and Tiber at Conrad as shown in Table 3. The average test weight of Rampart is comparable to all the varieties in Table 4 with the exception of Judith. Rampart is about two pounds higher in test weight than Judith.

Table 2. Disease and insect reaction of Rampart compared to six other hard red winter wheat varieties.¹

Variety	Sawfly	Dwarf smut	Stripe rust	Stem rust	Leaf spot complex	Wheat streak mosaic
Rampart	R	S	S	R	MR	MS
Judith	S	S	MR	R	R	S
Neeley	S	S	R	S	MR	MS
Redwin	S	S	M	S	S	MS
Rocky	S	S	M	R	S	MS
Tiber	S	S	M	S	MR	MR
Vanguard	R	S	S	S	MS	MR

¹S=susceptible; R=resistant; M=moderate

Table 3. Comparable average yields (bu/acre, 60 lbs/bu) on dryland, comparing Rampart to six other hard red winter wheat varieties (1993-1995).

Variety	Bozeman	Conrad	Havre	Huntley	Kalispell	Moccasin	Sidney	Average
Rampart	72.7	65.1	37.7	54.5	95.7	41.4	49.7	60.0
Judith	83.6	65.4	42.9	61.1	106.0	49.4	50.1	66.0
Neeley	77.2	68.4	42.0	58.5	102.9	51.9	49.1	64.6
Redwin	72.0	59.3	39.5	58.3	86.2	44.7	46.9	58.7
Rocky	77.1	65.1	44.0	58.3	91.3	46.5	49.7	62.1
Tiber	71.1	64.9	43.6	59.0	92.6	47.7	47.4	61.2
Vanguard	65.2	58.0	37.9	55.5	92.3	39.5	40.1	55.8

Quality Performance

Rampart is similar to Redwin and Vanguard with excellent milling and baking quality. Its percent protein is equal to Redwin and Vanguard. The flour yield and water absorption levels are acceptable to baking industry. Rampart's flour produces a loaf of bread with good volume (Table 5).